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(REV. 5-93)

U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE

TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US)

ATTORNEY'S DOCKET NUMBER 28170-00020

INTERNATIONAL APPLICATION NO. PCT/NO98/00336

INTERNATIONAL FILING DATE 11 November 1998

PRIORITY DATE CLAIMED 01 December 1997

TITLE OF INVENTION: METHOD FOR IMPROVING THE SETUP OF TELEPHONE-TO-TELEPHONE CALLS

#### APPLICANT(S) FOR DO/EO/US

Øyvind BREIVIK and Paul Torkil FJUK

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

- This is a FIRST submission of items concerning a filing under 35 U.S.C. 371. 1. X.
- This is a SECOND or SUBSEQUENT submission of items concerning a filing under 35 U.S.C. 371.
- This express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay \_X examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1).
- A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority <u>X</u> date
- 5. A copy of the International Application as filed (35 U.S.C. 371(c)(2)) Х
  - is transmitted herewith (required only if not transmitted by the International Bureau). a.
  - h has been transmitted by the International Bureau.
  - is not required, as the application was filed in the United States Receiving Office (RO/US) c.
- 6. A translation of the International Application into English (35 U.S.C. 371(c)(2)).
- 7. Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))
- <u>a.</u> are transmitted herewith (required only if not transmitted by the International Bureau).
  - b. have been transmitted by the International Bureau.
  - have not been made; however, the time limit for making such amendments has NOT expired.
  - d. have not been made and will not be made.
- 8. A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
- 9. An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4))
- 10. A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).

#### Items 11. to 16. below concern other document(s) or information included:

- 11. X An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
- 12. An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
- 13. A FIRST preliminary amendment.
  - A SECOND or SUBSEQUENT preliminary amendment.
- 14. A substitute specification.
- 15. \_\_\_ A change of power of attorney and/or address letter.
- 16. X Other items or information: Copy of the International Search Report; Copy of the International Preliminary Examination Report with Amended claims; one (1) sheet of Formal Drawings; Notice Under PCT Rule 47.1(c); Notice Under PCT rule 61.3; and Confirmation Postcard

CERTIFICATE OF MAILING BY EXPRESS MAIL

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I hereby certify that this paper or fee is being deposited with the U.S. Postal Service "Express Mail Post Office to Addressee" service under 37 CFR 1.10 on the date indicated above and is addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231

Type or Print Name:

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DROTHY MACKINGON

Barathy Mackinson

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U.S APA CATIS, 15.	POCATION INTERNATIONAL APPLICATION NO. PCT/NO98/00336		ATTORNEY'S DOCKET NUMBER 28170-00020		
17. X The following fees are submitted:			CALCULATIONS	PTO USE CNLY	
Basic National Fee (3 Search Report has been	7 CFR 1.492(a)(1)-(5 n prepared by the EPC				
International preliminar	y examination fee pa	d to USPTO (37 CFR	1.482) \$670.00		
No international preliminary examination fee paid to USPTO (37 CFR 1 482) but international search fee paid to USPTO (37 CFR 1.445(a)(2)) \$730.00					
Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO \$970.00					
International preliminary examination fee paid to USPTO (37 CFR 1.482) and all claims satisfied provisions of PCT Article 33(2)-(4)					
	ENTE	R APPROPRIATE BAS	IC FEE AMOUNT =	\$ 970	
Surcharge of \$130.00 for months from the earliest	r furnishing the oath o	or declaration later th (37 CFR 1.492(e)).	an <u>2</u> 0 <u>3</u> 0		
Claims	Number Filed	Number Extra	Rate		
Total Claims	18 - 20 =	0	x \$18.00	\$	
Independent Claims	1-3 =	o	x \$78.00	\$	
Multiple dependent claims	s(s) (if applicable)		+ \$260.00	\$ 260	
		TOTAL OF ABOVE	CALCULATIONS =	\$ 1230	
Reduction by 1/2 for filing by small entity, if applicable. Verified Small Entity statement must also be filed. (Note 37 CFR 1.9, 1.27, 1.28).			mall Entity	\$	
			SUBTOTAL =	\$	
Processing fee of \$130.00 for furnishing the English translation later the <u>20</u> <u>30</u> months from the earliest claimed priority date (37 CFR 1.492(f)).			\$		
TOTAL NATIONAL FEE =			\$ 1230		
Fee for recording the enc accompanied by an appro	losed assignment (37 priate cover sheet (3	CFR 1.21(h)). The a	assignment must be \$40.00 per propert <del>y</del>	\$	
TOTAL FEES ENCLOSED =			FEES ENCLOSED =	\$ 1230	
			Amount to be: refunded	\$	
				charged	\$
a. X A check in the amount of \$ 1230.00 to cover the above fees is enclosed.  b. Please charge my Deposit Account No. 10-0447 in the amount of \$ to cover the above fees. A duplicate copy of this sheet is enclosed.  c. X The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 10-0447 A duplicate copy of this sheet is enclosed.					
NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.					
SEND ALL CORRESPONDENCE TO:					
Stanley R. Moore, Esq. Jenkens & Gilchrist, P.C. 3200 Fountain Place SIGNATURE					SIGNATURE
1445 Ross Avenue Dallas, Texas 75202-2799 214/855-4500			Stanley	R. Moore NAME	
					6,958 TRATION NUMBER

METHOD FOR IMPROVING THE SETUP OF TELEPHONE-TO-TELEPHONE CALLS

## 5 Field of the invention

Generally, the present invention relates to Internet telephony and intelligent networks (IN) function.

More specifically, the present invention relates to a method for improving the setup of telephone-to-telephone

method for improving the setup of telephone-to-telephone calls using telephones connected to a PSTN/ISDN access network and using a separat network, especially Internet as a substantial by-pass network, special telephone gateways (GW) forming bridges between the access network

and said by-pass network, and connections being established between the user telephones (A,B) and the gateways (GW) that bridge the call.

## 20 Background of the invention

The application area of the present invention has been developed in connection with low tariff international telephone-to-telephone calls using the Internet as the main carrier network, but the general aspect of the invention may also be related to any quality of service required.

Furthermore, the present invention is applicable not oly to international and long distance services but also to any other geographically segmented services (e.g. local, regional, national).

Users have telephones connected to the PSTN/ISDN network. The Internet can be used to carry portions of the traditional PSTN/ISDN telephone-to-telephone calls. Special Internet telephony gateways GW form bridges between the PSTN/ISDN access network and the Internet (which acts as the carrier network).

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WO 99/29123 PCT/NO98/00336

In a traditional telephone-to-telephone call, a connection between two parties is established at the call set-up phase. The originating party and the terminating party are identified by their respective telephone numbers (caller A-num and callee B-num) during the set-up phase. Call logic is handled by the PSTN/ISDN network. In a telephone-to-telephone call using the PSTN/ISDN network as the access network and the Internet as the main carrier network, connections must be established between the user telephones and the gateways that bridge the call. The present invention presents a solution to the handling of call-establishment to the originating gateway. Extensions and enhancements to the basic inven-

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## Prior art

tion are described later.

## Existing solution and problems with these

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Referring to Figure 1, there will now be given a description about how a traditional internation call path is established.

The known solutions handle call establishment in two

25 phases. First, the caller (A) is required to set up a

connection to a preferred originating gateway (Gwa).

Second, the caller is required to dial the desired number
that identifies the terminating telephone (B-num).

As an illustration, a typical, although simplified, call handling sequence is as follows:

- 1. The caller (A) obtains a PSTN/ISDN connection to an originating gateway (Gwa) by dialing the gateway number.
- 2. GWa sends a new dial tone or a voice message to A to indicate that the connection has been established.

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- 3. The caller (A) dials the number that identifies the callee (B). (The gateway may extract the B-number from the connection by interpreting Dual Tone Multiple Frequency (DTMF) signals. Prior to this A may need to enter a PIN number or similar for authorization purposes).
  - 4. GWa performs a number analysis on the B-number to find the closest GW (Gwb) to B.
- 5. GWa establishes a data connection (connection oriented or connectionless) to the terminating gateway (Gwb) and transfers the B-number to Gwb using the data network.
  - 6. GWb in turn establishes the final PSTN/ISDN connection to the called party (B).
- One advantage of the known solutions, in this context, is that they make use of standard PSTN/ISDN functions.

  However, the known solutions require the caller to handle the call set up in two distinct phases which is cumbersome. The caller is also required to know the
- 20 telephone number of the preferred (i.e., closest) gateway. Indeed, the caller may need to keep a list of gateway telephone numbers if the preferred one is busy, or if it is down, or if other circumstances make it unavailable.
  - There are also other problems to the known solutions.
- 25 These are addressed in a later chapter which provides extensions to the present invention described prior thereto.

## Objects of the present invention

An object of the present invention is to provide a method for improving the setup of telephone-to-telephone calls in relation to the prior art procedures.

Another object of the present invention is to provide a method by which the caller is allowed to handle the call set-up in one single phase, as in the case of traditional "local" telephone calls.

More specifically, an object of the present invention is to make the associated gateways transparent to the caller.

Still another object of the present invention is to utilize Internet telephony and intelligent networks (IN) functions in a far more efficient and less costly manner.

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## Brief disclosure of the invention

The above objects are achieved in a method as stated in the preamble, which according to the present invention is characterized in that for the purpose of making the gateways transparent to the caller (A) the method allows the caller (A) to dial a by-pass network service prefix together with the number of the callee (B).

- More specifically, it is according to the invention suggested that said by-pass network service prefix, i.e. an IN service prefix is adapted to identify the relevant IN service for thereby routing the call to an IN node which can execute this IN service.
- In other words, the present invention allows the caller to handle the call set-up in one single phase, just as in case of conventional telephone calls, at the same time as the gateways appear transparent to said caller.
- Further features and advantages of the present invention will appear from the following description taken in conjunction with the enclosed drawings, as well as from the appending patent claims.

#### Brief disclosure of the drawings

Fig. 1 is a sketch illustrating a traditional international call path.

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Fig. 2 is a sketch illustrating an embodiment of the method according to the present invention.

## 10 Detailed description of embodiments

Fig. 1 illustrates a traditional international call path, which has been discussed previously, and wherein the setup of telephone-to-telephone calls are made using

- telephones connected to a PSTN/ISDN access network and using a separate network, here the Internet as a substantial by-pass network, special telephone gateways GWa and GWb forming bridges between the access network and said by-pass network, and connections being established between a caller telephone A and a callee telephone B through appropriate gateways GWa and GWb.
  - An embodiment of the present method is illustrated in Fig. 2, wherein the handling of call establishment will only take place in one phase.

More specifically, the present solution uses the Intelligent Network to:

30 1. Allow the user to establish a call in one single phase.

The user dials one number: IN service prefix + B-number. IN service prefix identifies the IN service: 'International calls over the Internet'. IN service prefix is used to route the call to the IN node which executes this IN service.

2. Automatically find the closest/available gateway

The IN service 'International calls over the Internet' will find the closest GW by analysing the A-number. The service can also route to alternative Gws if the closest is busy, etc.

5 3. Establish call to the GW

The IN service will establish the call to GW, hereby named Gwa. In the call setup the Gwa number is included as destination number. In addition, the A and B-number is included.

10 A proposal/example on how this can be transferred on ISUP (IAM message)/DSS1 (SETUP message):

CallingPartyNumber: A-number CalledPartyNumber: Gwa-number RedirectingNumber: B-number

15 The information flow (see Figure 2) is as follows:

b = Call routed to IN:

CallingPartyNumber: A-number

20 CalledPartyNumber: (IN service prefix +

B-number)

c = Call routed to Gwa:

CallingPartyNumber: A-number
CalledPartyNumber: Gwa-number
RedirectingNumber: B-number

#### Restrictions

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- 1. The invention couples gateway functionality with IN
  which makes the gateway equipment dependent on IN
  functionality. The provider of such a service becomes
  dependent on an operator with the specific IN
  functionality.
  - 2. Still address analysis in GWa (see Extensions).

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## Advantages

- Call establishment in one step only.
- Since IN service logic is coupled to the GW application, value added functionality can easily be included (such as automatically finding the closest or available gateway).
  - Number analysis can now be coupled with other services such as short numbers for a virtual network, and UPT.

## 10 Extensions and enchancements to the present invention

The problem area: GWa still needs to analyse the B-number to find the GW closest to user B. Having these number analysis functions distributed implies that many Gws must be updated when changes in the network occur. This is a network management problem which the extension to the basic invention solves.

Existing solutions and problems with these: The Gws can perform complete number analysis functions with B-number as input and Gwb address as result. This analysis must then be in every GW and the network will be hard to maintain.

The invention: An extension to the basic invention can be made to solve the problem in such a way as to find the closest terminating gateway for any terminating B- number.

- IN can be used to locate the terminating gateway. Suppose that A calls a B-number. In addition to finding the E.164 number to Gwa, IN can also find the IP-address to Gwb which is the gateway closest to the user B.
- The IN maintains a list of the gateways, with their
   respective IP-address and the respective area code(s).

- 2. Based on the area code of the B-number the IP-address to the closest GW is found.
- 3. In the call setup towards Gwa the IP-address of Gwb is included.
- 5 4. Gwa uses the received Gwb IP-address in the remaining call handling process.

A proposal/example on how this can be transferred on ISUP (IAM message)/DSS1 (SETUP message):

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CallingPartyNumber: A-number
CalledPartyNumber: Gwa-number
RedirectingNumber: B-number
Subaddress: Gwb IP-address

The information flow (see Figure 2) is as follows:

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a = A dials: (IN service prefix + B-number)

in one sequence

b = Call routed to IN:

CallingPartyNumber: A-number

CalledPartyNumber: (IN service prefix +

B-number)

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c = Call routed to Gwa:

CallingPartyNumber: A-number CalledPartyNumber: Gwa-number RedirectingNumber: B-number Subaddress: Gwb IP-address

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## Broadening

The application has only addressed the Internet as the carrier or bypass network but the application can be broadened to, in general, address networks based on IP-technology and even to other packet based networks or technology, such as Frame Relay, ATM, hybrids of these, and so on.

Furthermore, the present invention is applicable not oly to international and long distance services but also to

any other geographically segmented services (e.g. local, regional, national).

## 5 <u>References</u>

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WO-SE00680: "Speech connection set-up method for interconnected networks registering network address of users who has a telephone and PC on network, with telephone system and uses address when making call connection".

Comments: The WO-SE00680 patent is related to this patent application in the sense that it too uses certain IN functions to solve certain addressing problems related to the domain of gateways. Note, however, that it addresses a different problem within this domain. The following is a list to illustrate some of the differences:

- WO-SE00680 addresses an application area that have users connected to special PCs (PC connected telephones) not plain old PSTN/ISDN telephones.
- WO-SE00680 uses IN primarily to locate called users using special PCs on a data network not handle call set-up of telephone-to-telephone calls over the internet in one single phase.
- WO-SE00680 uses a register function to keep track of the location of the users and the gateway that the respective users have registered with this patent application does not use such an explicit register function.
- WO-SE00680 transfers the IP-address of a called user to the gateway that the user has a priori registered with In its basic form this application only transfers the B-number of the called user. In its extended form the B-number and the IP-address of the terminating gateway is transfered to the originating gateway for the purpose of addressing locating the nearest gateway.

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# Patent claims

(Amended 02.02.2000)

- 1. Method for setting up telephone-to-telephone calls using telephones connected to a PSTN/ISDN access network and using a separate network, especially Internet as a substantial by-pass network, special telephone gateways (GW) forming bridges between the access network and said by-pass network, and connections being established between the user
- 10 telephones (A,B) and the gateways (GW) that bridge the call,
  - c h a r a c t e r i z e d i n that the calling party (A) in a one-step procedure dials a by-pass network service prefix together with the number of the called party (B),
- i.e. a prefix + B-number, and more specifically an IN service prefix, that said by-pass network service prefix is analysed to identify the relevant IN service for thereby routing the call to an IN node which can execute this IN service,
- the IN service establishes the call to an appropriate gateway (GW), which means that the gateway is made service transparent to the calling party (A).
  - 2. Method as claimed in claim 1,
- characterized in that said IN service is arranged to find the most appropriate, e.g. the closest gateway (GW) by analyzing the caller's number (A), and/or possibly route the call to an alternative gateway if the closest is busy, etc.
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- 3. Method as claimed in claim 2, c h a r a c t e r i z e d i n that after the IN service has established the call (A) to the most appropriate gateway (GW), (GWa) there is in the call set-up included the
- associated gateway number (GWa) as destination number, as well as the caller number (A) and the callee number (B).

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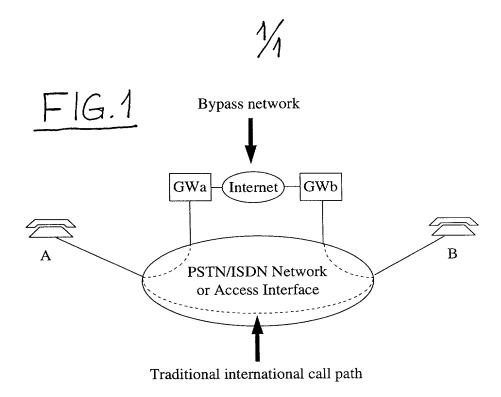
- 4. Method as claimed in claim 3, c h a r a c t e r i z e d i n that address analysis is carried out in the gateway (GWa) to which the call has been routed.
- 5. Method as claimed in claim 4, c h a r a c t e r i z e d i n that number analysis is coupled with other services, for example short numbers for virtual network, and UPT.
- 6. Method as claimed in any of the preceding claims, characterized in that a process for finding the most appropriate gateway for any terminating callee number (B) is carried out in the intelligent network (IN),
- i.e. by finding the E.164 number to an appropriate gateway (GWb), as well as the IP (Internet Protocol) address to the gateway (GWb).
  - 7. Method as claimed in claim 6,
- characterized in that there is maintained an updated list of gateways in the by-pass network, as well as a list of respective IP-addresses and the respective area code(s).
- 25 8. Method as claimed in any of the preceding claims, c h a r a c t e r i z e d i n that the area code of the number (B) of the callee is used to find the IP-address of the most appropriate callee gateway (GWb), for example the closest gateway thereof.
  - 9. Method as claimed in any of the preceding claims, c h a r a c t e r i z e d i n that in the call setup from the intelligent network (IN) towards the access gateway (GWa) the IP-address of the terminal gateway (GWb) is in-
- 35 cluded, so that the access gateway (GWa) can use the received terminal gateway (GWb) IP-address in the remaining call handling process.

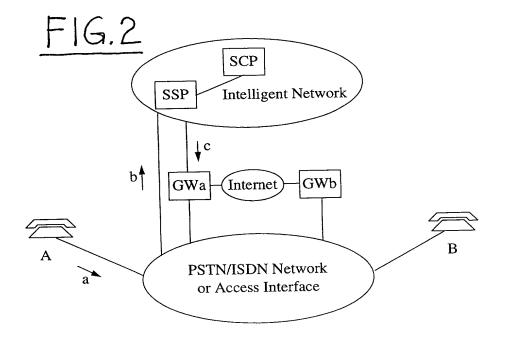
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10. Method as claimed in any of the preceding claims, c h a r a c t e r i z e d i n that the most appropriate gateway (GWa) or gateways (GWa, GWb) is/are selected according to the quality of service (QoS) required, or possibly according to other criteria, for example tariff, availability, etc.

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## RULES 63 AND 67 (37 C.F.R. 1.63 and 1.67) DECLARATION AND POWER OF ATTORNEY

# FOR UTILITY/DESIGN/CIP/PCT NATIONAL APPLICATIONS

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name; and

I believe that I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled: **METHOD FOR IMPROVING THE SETUP OF TELEPHONE-TO-TELEPHONE CALLS**, the specification of which: (mark only one)

<u>X</u>	(a) (b)	is attached hereto. was filed on MAY 31, 2000 (I.A. Filing Date: 11 November 1998) as Application Serial No. 09/555,592 and was amended on (if applicable)
	(c)	was filed as PCT International Application No. <u>PCT/NO98/00336</u> on <u>11 NOVEMBER 1998</u> and was amended on (if applicable).
	(d)	was filed on as Application Serial No and was issued a Notice of Allowance on
<del></del>	(e)	was filed on May 31, 2000 and bearing attorney docket number 28170-00020

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims as amended by any amendment referred to above or as allowed as indicated above.

I acknowledge the duty to disclose all information known to me to be material to the patentability of this application as defined in 37 CFR  $\S$  1.56. If this is a continuation-in-part (CIP) application, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of 35 U.S.C.  $\S$  112, I acknowledge the duty to disclose to the Office all information known to me to be material to patentability of the application as defined in 37 CFR  $\S$  1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application.

I hereby claim foreign priority benefits under 35 U.S.C. § 119/365 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate filed by me or my assignee disclosing the subject matter claimed in this application and having a filing date (1) before that of the application on which my priority is claimed or, (2) if no priority is claimed, before the filing date of this application:

#### PRIOR FOREIGN PATENTS

Date first laid-opeDate patented orPrioity Claimed

Number Country Month/Day/Year Filedr Published Granted Yes No

19975518 NORWAY DEC. 1, 1997 XX

I hereby claim the benefit under 35 U.S.C. § 120/365 of any United States application(s) listed below and PCT international applications listed above or below:

## PRIOR U.S. OR PCT APPLICATIONS

Application No. (series code/serial no.) Month/Day/Year Filed Status(pending, abandoned, patented)

PCT/NO98/00336 NOV. 11, 1998 Pending

## I hereby appoint:

TIMOTHY G ACKERMANN, Reg No 44,493 THOMAS E ANDERSON, Reg No 37,063 BENJAMIN J. BAI, Reg No 43,481 MICHAEL J BLANKSTEIN, Reg No 37,097 MARY JO BOLDINGH, Reg No. 34,713 MARGARET A. BOULWARE, Reg No 28,708 ARTHUR J BRADY, Reg No 42,356 MATTHEW O BRADY, Reg. No 44,554 DANIEL J BURNHAM, Reg. No 39,618 THOMAS L CANTRELL, Reg No 20,849 RONALD B COOLLEY, Reg No. 27,187 THOMAS L. CRISMAN, Reg. No. 24,846 STUART D. DWORK, Reg. No. 31,103 WILLIAM F. ESSER, Reg No. 38,053 ROGER J FRENCH, Reg. No. 27,786 JANET M GARETTO, Reg No 42,568 JOHN C. GATZ, Reg No. 41,774 RUSSELL J GENET, Reg. No 42,571 J. KEVIN GRAY, Reg No. 37,141

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all of the firm of **JENKENS & GILCHRIST**, a **Professional Corporation**, 1445 Ross Avenue, Suite 3200, Dallas, Texas 75202-2799, as my attorneys and/or agents, with full power of substitution and revocation, to prosecute this application, provisionals thereof, continuations, continuations-in-part, divisionals, appeals, reissues, substitutions, and extensions thereof and to transact all business in the United States Patent and Trademark Office connected therewith, to appoint any individuals under an associate power of attorney and to file and prosecute any international patent application filed thereon before any international authorities, and I hereby authorize them to act and rely on instructions from and communicate directly with the person/assignee/attorney/firm/organization who/which first sent this case to them and by whom/which I hereby declare that I have consented after full disclosure to be represented unless/until I instruct them in writing to the contrary.

Please address all correspondence and direct all telephone calls to:

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I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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